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Corona file

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Copy 6 of 8
8 October 1969

MEMORANDUM FOR: Acting Director of Special Projects

**SUBJECT : NPIC Interpretability Ratings--KH-4B vs.
KH-4A Against Ground Force Targets**

1. Recent NPIC briefings to COMIREX in connection with the KH-4 high/low issue suggest the increased scale and resolution of KH-4B at 85 nm vice 100 nm is of some value to the PI's, principally with regard to the relatively small ground force targets. The missile and space targets were described as relatively insensitive to 100 vice 85 nm.

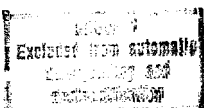
2. NPIC experiments utilizing good quality KH-4B photography (taken near nadir) which had been enlarged to simulate 100 nm altitude did show some albeit not impressive advantages of 85 nm vice 100 nm on a dozen or so selected targets. One technical drawback to this experiment is how to balance off the positive bias resulting from use of very good quality KH-4B photography against the negative bias resulting from use of the enlarger, which has been described as a poor piece of equipment.

3. I have hypothesized KH-4B imagery from 85 nm should do relatively better than KH-4A imagery from 100 nm against the small ground force targets than against other categories of targets. I have accordingly sorted our data bank on PI ratings contained in the BLIP file to test this hypothesis.

4. Six KH-4B missions at 85 nm (1101-1106) were compared with six KH-4A missions at 100 nm (1044-1049). They cover a period of September 1967 to February 1969, and are conveniently "interleaved" with each other. It should be noted we are comparing 4B imagery with 4A imagery, not 4B with 4B as was done in the NPIC experiment. Further, the 4A mission photography actually averages an altitude over

NRO review(s) completed.

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the Sino-Soviet Bloc of about 106 nm, whereas the 4B photography is at 85 nm or very close to it. KH-4A mission 1049 was one of the worst, if not the worst, missions flown in the last five years in terms of atmospherics. I have computed the averages substituting 1043 for 1049; this makes a slight improvement for KH-4A (1043 was also a poor mission in terms of atmospherics).

25X1

5. I have data which strongly suggests if the PI's were to rate all these missions a second time, they would change their GOOD, FAIR, and POOR interpretability ratings "one notch" about 14 percent of the time. By lumping GOOD and FAIR together we can reduce this to 7 percent and say plus or minus 3.5 percent. I agree with [redacted] that only general conclusions should be drawn from this type of data.

6. When the 22,959 ratings for all targets except 7A's for the six KH-4B missions are compared with 25,760 ratings for the six KH-4A missions, we find the GOOD and FAIR ratings of the KH-4B are .084 percent greater than the GOOD and FAIR for the KH-4A. When the 4779 ratings for 7A's only from KH-4B are compared with the 5767 from KH-4A, we find the KH-4B is .072 percent greater. When we "take out the weather", i.e., compute only ratings involving CLFAR photography, we find the KH-4B is only .025 percent greater.

7. Thus, regardless of what one could (or should not) read into the data, the hypothesis is not substantiated by the data. Pending the outcome of additional analysis now underway, about all we can conclude from the attached is the PI smiles more and frowns less with KH-4B imagery in general.

SA/IS/OSP

Attachment: a/s

Distribution:

cy 1 - Addressee w/att

cy 2 - C/D&AD/OSP w/att

cy 3 - C/MAB/D&AD/OSP w/att

cy 4 - C/OB/D&AD/OSP w/att

cy 5 - PD/H/OSP w/att

cy 6 - [redacted] w/att

cy 7 - SA/IS/OSP w/att

cy 8 - RB/OSP w/o att

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Attachment to:

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ALL WEATHER									ALL WEATHER						CLEAR ONLY				
ALL TARGETS EXCEPT TAs									TA TARGETS ONLY						TAs ONLY				
MISSION NUMBER	NO.	NO.	NO.	%	%	%	%	NUMBER	o/o	%	%	%	%	NUMBER	%	%	%	%	%
RATINGS	GOOD	FAIR	POOR	GOOD	FAIR	POOR	GOOD FAIR	RATINGS	TOTAL	GOOD	FAIR	POOR	GOOD FAIR	RATINGS	GOOD	FAIR	POOR	GOOD FAIR	GOOD FAIR
1101	3848	464	2373	1011	.120	.616	.262	.737	6.79	.150	.089	.727	.182	.817	5.68	.107	.811	.081	.919
1102	2512	480	1333	399	.217	.602	.180	.819	3.99	.152	.165	.704	.130	.869	3.47	.187	.746	.066	.933
1103	5655	258	3620	1797	.045	.640	.314	.685	12.59	.182	.038	.574	.287	.612	7.58	.060	.816	.122	.877
1104	4736	408	2391	1251	.101	.589	.310	.691	8.44	.173	.066	.600	.328	.667	5.02	.105	.770	.123	.876
1105	4100	667	2279	1154	.162	.555	.281	.718	9.01	.180	.215	.541	.243	.756	6.98	.267	.620	.111	.888
1106	3088	384	1854	871	.123	.596	.279	.720	6.97	.183	.160	.579	.309	.690	5.13	.216	.627	.154	.846
Total	22959	2661	13340	6462				4779							3386				
Average	3826	443	2306	1077	.115	.602	.281	.718	7.96	.172	.112	.598	.287	.711		.154	.732	.112	.887
1043																			
1044	3335	497	1979	859	.149	.593	.257	.742	7.30	.145	.687	.167	.832		6.44	.164	.754	.080	.919
1045	2449	375	1653	821	.131	.580	.288	.711	5.22	.093	.752	.153	.846		4.56	.127	.802	.089	.910
1046	5764	277	3217	2270	.048	.558	.393	.606	13.25	.018	.692	.289	.710		9.54	.025	.849	.125	.874
1047	5008	241	3036	1981	.045	.581	.373	.626	9.69	.024	.571	.799	.120		5.78	.048	.773	.178	.821
1048	4306	491	2387	1428	.114	.554	.331	.668	9.03	.052	.613	.334	.665		6.75	.069	.745	.180	.819
1049	4198	195	1941	2062	.046	.462	.491	.508	13.18	.031	.355	.613	.386		5.21	.078	.756	.168	.831
Total	25760	2876	14263	9421				5767							3828				
Average	4193	346	2377	1570	.080	.553	.365	.634	9.61	.182	.051	.587	.361	.639		.077	.735	.137	.862
CLEAR SCATTERED CLDS HEAVY CLDS HAZE CLO SHADOW SNOW SEMI-DARK OBL. RQ. UTY SMALL SCALE																			
1101-1106	.790	.115	.035	.142	.047	.196	.012	.057	.073										
1044-1049	.707	.100	.035	.174	.049	.206	.039	.052	.053										
R.A.-40s	.023	.015	.000	.032	.002	.010	.027	.005	.010										

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